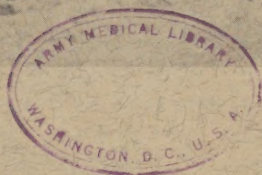


93698

A SURVEY OF

# Sanitary and Safety Conditions in New Hampshire Schools



NEW HAMPSHIRE, STATE DEPARTMENT OF HEALTH

*Division of Food and Chemistry*

Concord, New Hampshire



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Q 14 July 1947

## FOREWORD

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For a number of years, and more noticeably during the war years, The State Department of Health has received numerous complaints from various areas in the state relative to the physical and sanitary conditions of our public schools. Many of these complaints have originated in rural areas concerning one-room schools which have for years served our rural population. Many of these complaints have been petty in nature, indicating local friction, but there were some which greatly concerned this department.

In order to properly evaluate health and safety conditions in our public schools it was recommended by the State Departments of Education and Health that a spot survey of conditions be conducted. Due to limitations in number of personnel, funds and length of time available, a complete coverage of all schools was deemed impossible. To insure an impartial selection of communities, every third town or city was chosen from an alphabetical list as "survey centers." It was believed that employing this method a fair statistical average could be obtained. The total number of towns selected was eighty-three, involving a total of two hundred and seven schools. Of this number one hundred and fifty-four were elementary, twenty-four secondary, nine consolidated twelve-year schools and twenty private schools.

The general objective of the survey was to obtain the overall health and safety pictures in the two hundred and seven schools. The most important items considered in working toward this objective were: heating, ventilating, fire protection and water supply systems; also, drinking, washing, toilet, sewage and storage facilities; lighting (artificial and natural); gymnasium and auditorium compliance with the so-called Coconut Grove law; facilities for school lunch programs; and the availability of medical, dental and nursing facilities.

It is sincerely hoped that certain information received from facts compiled in this survey can be used to set up minimum standards for the public and private schools of this state. The ultimate aim of this survey is to make the people of New Hampshire more conscious of school health needs, with the hope that this understanding will lead toward the future planning of better schools.

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TOWNS AND CITIES INCLUDED IN THE SURVEY

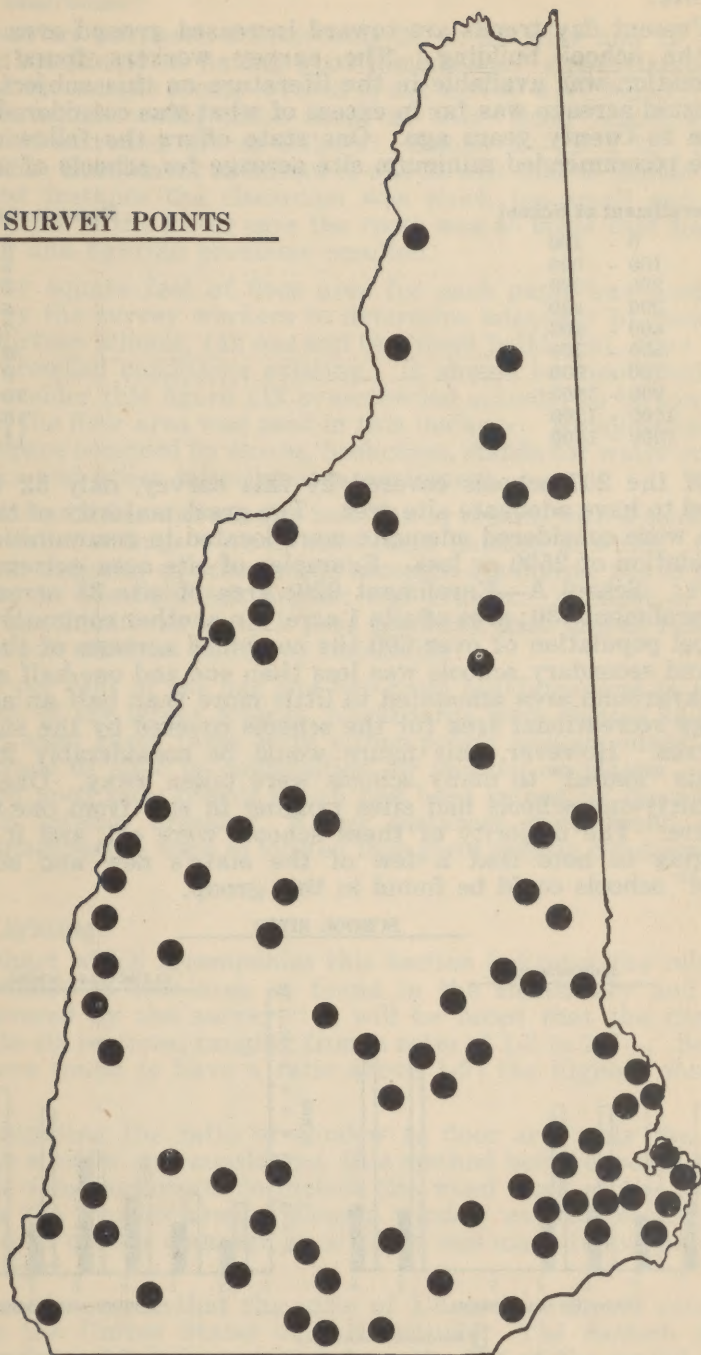
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Alexandria  
Alton  
Antrim  
Auburn  
Bartlett  
Bedford  
Benton  
Berlin  
Boscawen  
Brentwood  
Brookfield  
Canaan  
Carroll  
Chatham  
Chichester  
Claremont  
Colebrook  
Concord  
Cornish  
Danbury  
Deering  
Dorchester  
Dover  
Dummer  
Effingham  
Epping  
Exeter  
Fremont  
Gilmanton  
Gorham  
Grafton  
Grantham  
Greenfield  
Greenville  
Hampstead  
Hampton  
Hanover  
Haverhill  
Hinsdale  
Hollis  
Jackson

Keene  
E. Kingston  
Landaff  
Lebanon  
Lee  
Lisbon  
Litchfield  
Littleton  
Loudon  
Lyndeboro  
Lyme  
Mason  
Milton  
Newington  
Newmarket  
New Durham  
North Hampton  
Nottingham  
Ossipee  
Peterborough  
Pittsfield  
Plymouth  
Portsmouth  
Raymond  
Rochester  
Rollinsford  
Rumney  
Salem  
Salisbury  
Shelburne  
Somersworth  
Stoddard  
Stratford  
Stratham  
Surry  
Tamworth  
Troy  
Unity  
Westmoreland  
Whitefield  
Wilton

Wolfeboro

**SURVEY POINTS**





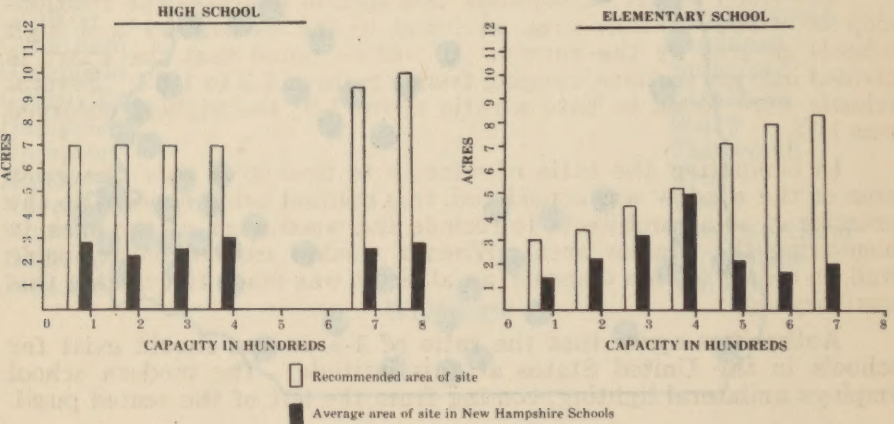
### The Site:

Present day trends are toward increased ground area surrounding the school building. The survey workers found wherever information was available in the literature on this subject, that the suggested acreage was far in excess of what was considered adequate fifteen to twenty years ago. One state offers the following figures as the recommended minimum site acreage for schools of all kinds:

Enrollment of School	Recommended Acreage
0 - 100	5
100 - 200	5-1/2
200 - 300	6
300 - 400	6-1/2
400 - 500	7-1/4
500 - 700	8
700 - 900	9
900 - 1100	10
1100 - 1300	10-1/2
1300 - 1500	11-1/4

Of the 207 schools covered by this survey, only 32 were considered to have adequate site area. The great majority of the schools which were considered adequate were located in communities having a population of 2500 or less. Examples of site area extremes are as follows: School A—Enrollment 920; area of site 33 acres. School B—Enrollment 530; area of site 1 acre. In another community having a school population of over 500 the combined acreage of the elementary and secondary schools was less than one and one-half acres, and the playground area amounted to little more than half an acre. The average recreational area for the schools covered by the survey was 1.8 acres. However, this figure would be considerably lowered if grounds “loaned” to many schools were taken away. One hundred and thirty-one schools had sites ranging in size from one-fourth to one acre. The majority of these schools were old, and it was discouraging to note that a few of the state’s new and supposedly “model” schools could be found in this group.

### SCHOOL SITES



### General Classrooms:

For survey purposes, schoolrooms 20' to 24' wide and 29' to 34' long were considered as having good dimensions. Approximately 35 per cent of the sample rooms covered in the survey were found to have dimensions which would place them in this "good" classification. Examples of extremes are as follows: School A—12' x 26'; School B—41' x 25'. Enrollment in School A was 20 and that of School B, 26. In the first instance the classroom was much too small and overcrowded, while in the latter case the room was so large that heating, ventilating and lighting problems resulted.

Twenty square feet of floor area for each pupil was used as a standard by the survey workers to determine adequacy of classroom space. Thirteen schools, (all one and two-room buildings), were found with overcrowded conditions existing. It should be mentioned here that we consider this figure (13 overcrowded schools) to be conservative, as all the floor area was used in this instance. No allowance was made for space occupied by stoves, bookcases, stands for water coolers, cloak racks and other miscellaneous equipment.

Classroom finish was usually buff, tan or cream, with a semi-gloss finish for walls; ceilings were in most cases finished in white. Colors in the great majority of schools met accepted standards, but in nearly 50 per cent of the buildings neglect was evident. In most of these buildings the finish was in such poor condition that proper reflection of natural and artificial light was impossible.

In 80 per cent of the one and two-room buildings, and in nearly 25 per cent of the larger schools, blackboards were classed as inadequate. In most cases these were either poorly located, made of an inferior grade of slate or composition, or painted on plaster. Some schools had good slate boards which had been ruined by the application of an inferior dressing. Other instances were found where excellent blackboards were so located that glare greatly cut down their efficiency.

### Natural Lighting:

The chart which accompanies this section indicates the relationship of window-to-floor area as found in the elementary and high schools covered by the survey. It will be noted that the chart is divided into six sections, ranging from a ratio of 1-3 to 1-8+. Several schools were found to have a ratio above 1-9; the highest observed was 1-13.

In computing the ratio of window to floor area only the glass area of the window was considered, this method being opposed to the practice of some architects to include the wood work of the sash in measuring the window area. When a window existed on an inside wall, in a door or in a transom, an attempt was made to evaluate this auxiliary light.

Authorities agree that the ratio of 1-5 or less should exist for schools in the United States at this latitude. The modern school employs unilateral lighting, coming from the left of the seated pupil.



For the purpose of these findings, no distinction has been made on the chart between schools which have unilateral, bilateral or multilateral methods of bringing natural light into the classrooms.

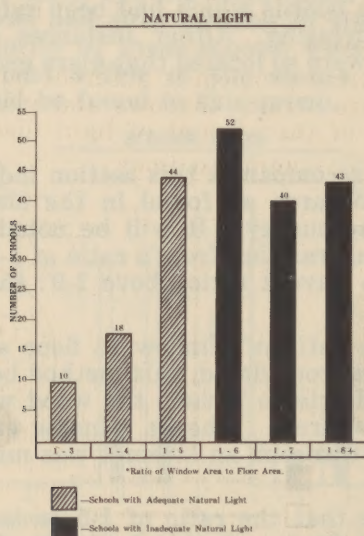
The high schools included in the survey made a much better showing than the elementary schools. This is the result of more recent construction and newer theories of lighting.

Fifty-nine schools were found to have unilateral lighting, twenty-four have multilateral and one hundred and twenty-four schools have bilateral lighting. The highest light meter readings were found in those schools that had multilateral lighting, but on the other hand the latter type of lighting presented greater problems of glare and shadows.

Most designers of the older schools did not install the windows to the ceilings, thereby failing to take advantage of the full height of the room. The average ceiling height of the schools was found to be 11- $\frac{1}{4}$  feet. Ceilings and walls were neglected in about 50 per cent of the surveyed schools. Windows were improperly curtained in 40 per cent of the buildings examined. In some cases they were not of translucent material. Due to worn out springs, cords and rusty fixtures, many curtains were not used.

While glare exists in nearly all our schools, an excessive amount was found in 11 per cent of the buildings covered by the survey. Not one school of the 207 included in the survey was found to be taking advantage of any of the modern means for proper light diffusion.

The schools of New Hampshire cannot be classed as good when figures show that 135 out of 207, or 65 per cent, of those surveyed do not meet the minimum requirements for natural light.



\*For survey purposes, rooms with 1 square foot of natural light area to 5 square feet of floor area, or better, were considered adequate.



## Artificial Lighting:

For survey purposes the formula of Strayer and Englehardt was employed, i.e., the floor area divided by 110 indicates roughly the number of fixtures necessary. Recommended wattage was obtained by using 200-watt bulbs in each of the fixtures necessary and not less than 150-watt bulbs to satisfy minimum standards. For example, a room 22' x 30' would require a minimum of six fixtures,—i.e., six fixtures with a 150-watt bulb in each fixture.

The above wattages all refer to incandescent lighting. Fluorescent intensity was used in the chart by multiplying the wattage by  $2\frac{1}{2}$ , which is roughly its efficiency rating over the incandescent lamp.

While time did not permit a study of every classroom in all the schools surveyed for lighting, attempts were made to measure a room which seemed typical of the school. Light adequacy of our elementary classrooms was found to be nearly 50 per cent short of recommended wattage, while secondary classrooms needed an additional 40 per cent. Five out of six one-room schools do not meet the minimum standards and this explains, in part, the poorer showing for elementary schools.

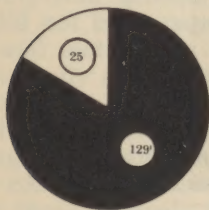
Two schools were without electric lights, and although kerosene lamps were provided they are very seldom used. In another situation a school lights its classroom with a single 40-watt bulb, while still another uses a 75-watt lamp. Many communities have installed an unshaded light over the teacher's desk and for obvious reasons this is never used.

Lights were found off in some classrooms even on dull and rainy days. Our light meters registered 5-foot candles or less in certain parts of these rooms. We were confronted with many cases in the same school where lamps were unshaded and bulbs were found with varying voltage capacities.

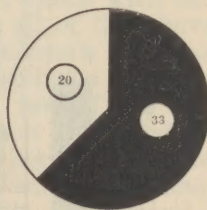
Every school lighting problem is different but poor lighting presented problems of eye strain, shadows and glare. Teachers were found to be unaware of the amount of light dissipated while being

### ARTIFICIAL LIGHT

PUBLIC ELEMENTARY SCHOOLS



HIGH, PRIVATE AND TWELVE YEAR SCHOOLS



■ —\*Schools with Inadequate Light  
□ —\*Schools with Adequate Light

\*For survey purposes the following formula was used to compute adequacy of artificial light—150 watts for each 110 square feet of floor area.

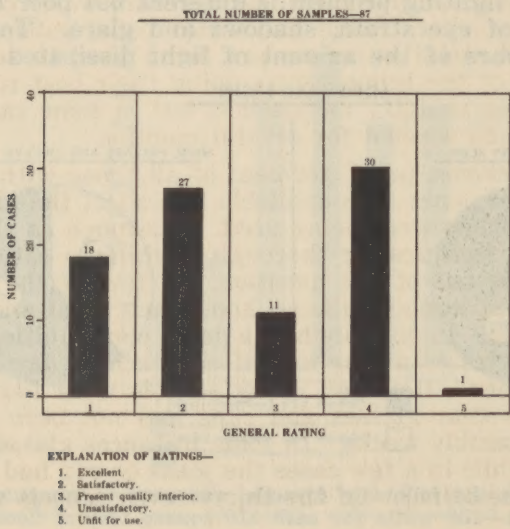
brought from out of doors to the inner row of desks in their classrooms. In most of the schools the classroom lights are on a single circuit, thus making light control difficult. Many cases exist where wiring is not in conduit and this condition creates a fire hazard. Over 95 per cent of the schools are using No. 14 wire, and as new equipment has been added the lines have become overloaded.

Authorities state that three per cent of infants in this country are near-sighted, while 40 per cent of those graduating from colleges have defective vision. All research studies where achievement was measured state that as lighting was improved better school work resulted. One recent case was the Cambridge, Massachusetts experiment where a 2-1/2 per cent increase in the school budget for lighting resulted in about 10 per cent gain in educational age. For the sake of health, posture, learning and even psychological reactions, better lighting seems to be imperative.

**Drinking Water Supplies:**

Of the 207 schools visited 87 were found to be using water from privately-owned wells, springs or brooks. In practically every case no analysis had ever been made of these private supplies. Water analysis reports were available in a few instances, but the majority of these were too old to be of any value. A few examples of the small amount of value which can be placed in old reports are as follows: Well "A"—only other analysis was in 1939. Rating at that time "2"; rating of 1947 analysis "4". Well "B"—only other analysis was in 1941. Rating at that time "3"; rating of 1947 analysis "4". Well "C"—only other analysis was in 1943. Rating at that time "1"; rating of 1947 analysis "4". It is to be noted that during this interim no changes have been made in this department's system of reporting.

**WATER ANALYSIS RATINGS**





Seventy of the schools using water from wells and springs did not have the supply piped into the school buildings. In many cases water was carried for some distance and in some instances the containers used were found to be very insanitary. Three schools were found to be using water from open brooks or springs. In none of these cases had the water ever been analyzed; furthermore, school officials seemed to be unaware that the statutes of this state prohibit the use of such water for drinking or cooking purposes.

In general, the condition of water used in our schools does not present an encouraging picture. The 87 samples taken were found to have a range in general character of from "1" to "5". Of primary significance is the fact that 33 per cent of these samples were classified in the "4" and "5" groups, which, at best, are of "doubtful" character.

### **Drinking Water Facilities**

One of the most serious problems which our schools are confronted with is that of inadequate drinking facilities. If the 207 schools covered in the survey represent an accurate picture of the state as a whole, a great deal can and should be done to better conditions which exist in our schools. One hundred and thirty-six schools with running water had bubbler-type drinking fountains. Of this number, 93 did not meet the requirements for drinking fountains as prescribed in Regulation 7 of the Manual for Plumbers and Plumbing Boards. The bubblers in a few of these schools were at least twenty-five years old and in very poor repair. Forty-five, or 33 per cent, of the schools with running water and drinking fountains complied with the regulations. This is not an encouraging picture when compared with the 67 per cent having drinking facilities which would not be allowed in new construction or as replacements.

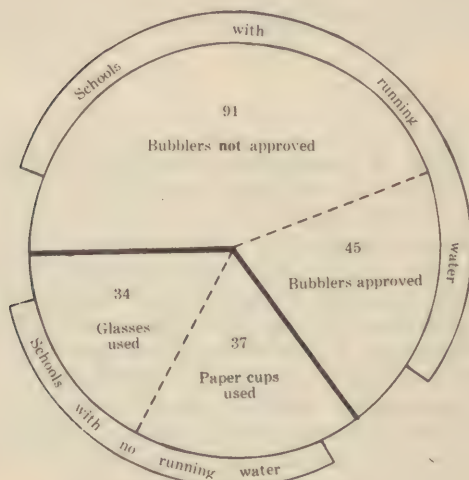
Seventy-one schools surveyed did not have running water. Most of these schools used the five-gallon earthenware water cooler. However, the survey workers found galvanized pails, gallon glass jugs, milk pails and old metal water coolers being used in some schools. Teachers in most of the schools were doing their best to keep these water containers as sanitary as possible, but in some cases the containers had not been washed for several months.

Thirty-four schools, or 47 per cent of all those with no running water, did not have paper cups available. In all of the above schools glasses and metal cups were being used. Inasmuch as these schools had practically no facilities for thorough washing, a satisfactory job of disinfecting was out of the question. A few of the teachers in rural schools took all cup and glasses home each night and gave them a thorough washing. In possibly half a dozen communities, interested parents collected glasses at the end of each school day and washed them in their homes. However, many schools were found where it was quite obvious that glasses and cups had not been washed for several days, or possibly weeks. In some instances glasses were kept in pupils' desks, while in a few cases the glass or cup had no marking on it to indicate the owner. Of the thirty-seven schools where paper

cups were used five were found where pupils were given one cup a week. Teachers in these schools contended that this was all their supply would allow.

### DRINKING FACILITIES

TOTAL NUMBER OF SCHOOLS—207



### Toilet Facilities and Sewage Disposal

Practically all the schools surveyed were found to have a sufficient number of toilets. However, many schools had toilet facilities which were very undesirable. The great majority of the country schools surveyed had privies, and nearly two-thirds of these were rated as poor. In some of these schools the toilet facilities showed a general lack of care. Other schools were found where little attempt had been made at proper screening and fly-proofing. Such conditions as the above must be classified as a menace to the health of the children when we consider that at least 50 per cent of the boys and girls in these schools carry lunches and are daily subjected to the possibility of acquiring fly-borne diseases.

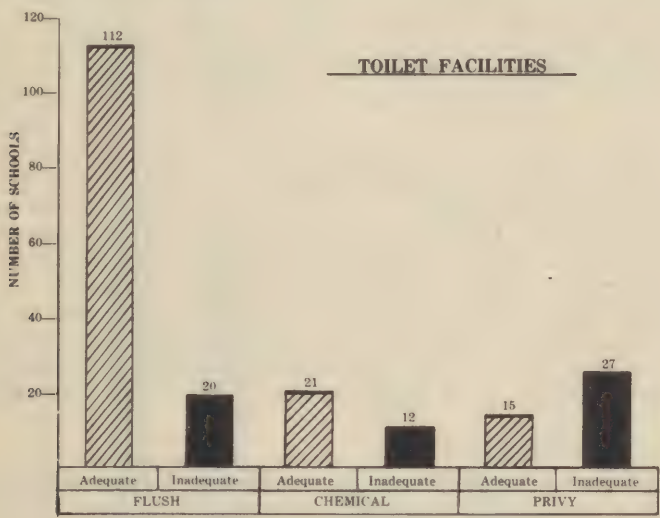
Thirty-one schools of the 207 surveyed had chemical-type toilets. It is common knowledge that this type of toilet must have proper care in order to insure efficient operation, and yet several of these installations were in extremely bad repair. In one town the chemical toilets in the two schools were functioning perfectly and had been working properly for nearly ten years, while in another community the same



type of toilet was practically useless after about five years of operation. The latter condition in most cases can be attributed to improper care, indifference, or both.

The majority (132 of the 207 schools surveyed) had flush toilets. Twenty schools in this group were rated as inadequate, and the great majority of these were given this rating because of lack of proper attention.

Methods of sewage disposal in those schools supplied with flush toilets were in the majority of cases satisfactory. In only a few instances did we observe septic tank effluents disposed of above ground. One of these cases resulted in a complaint filed by a mother whose child fell accidentally into the rather large stream of sewage. All sewage must be disposed of underground, either through a tile field or a series of dry wells.



**School Health Program**

Analysis of the school health program schedules as completed reveals a rather startling lack of concerted or systematic planning for school health. It is quite apparent that the school nurse is the key-person in the school health program. It was interesting to note that some of the teachers and a few of the school nurses, who were the persons filling out the schedules, were unaware of community facilities for health or for facilities available to them in the state as a whole. So far as the health department is concerned, it is gratifying however that most of the persons filling out the schedules were aware of the orthopedic clinics conducted by the State Health Department. The only other facilities which were mentioned were the cancer clinics, the tuberculosis clinics and the mental hygiene clinics. The only local facility mentioned was the Mary Hitchcock Clinic in Hanover.

It is difficult to state any recommendations based on the facts gathered since most of the schedules were very poorly completed and were not easy to interpret. The most outstanding fact revealed, however, is that there is apparent lack of insight into the physical and mental needs of the school children and a failure on the part of local school authorities, including teachers and, in some instances, nurses.

There is an apparent lack of knowledge concerning local or state facilities which are available. Most teachers knew of the existence of local hospitals and the presence of local doctors, but did not realize the importance of the presence of these facilities in their community. It was amazing that despite the fact the state law requires that every child shall have a physical examination by a physician once a year, or at least during the school period, 25 schools, five of which were in one city, did not have any annual examinations. In one town the list shows that this examination was not given by a physician but by a school nurse. This is a situation which needs correction. It should be noticed that parent participation is almost lacking, and that even though physical examination may be made, there is an apparent lack of follow-up. Immunizations against communicable diseases are fairly well taken care of during pre-school years, and some schools mention toxoid clinics. It is interesting to note that defects found are for the most part orthopedic, for which correction follow-up is carried on by the State Health Department. It is recommended that a concerted effort be made with the cooperation of the State Department of Education and the State Department of Health, to plan for an integrated health education program in the schools and to intensify, through stimulation of teachers and school authorities, a better concentration of the needs of the school child concerning health problems, with a careful follow-up of these in the child's home and community.

### **The School Lunch Program**

A great deal of interest has developed during the past year in the noon lunch program. Many small schools which never before have had facilities for preparing and dispensing food are now serving a type A lunch each noon for the greater part of the school year. Much of the credit for this sudden interest in the school lunch program must be given to Parent-Teacher Organizations, the State Supervisor of School Lunches and ambitious teachers. In several small communities public-spirited parents help daily with the preparation and serving of the lunch. The survey workers found a few instances where the school had no cooking facilities, and yet a lunch is served daily. In these communities parents prepared the food at home, carried it to the schools and assisted in the serving.

Fifty-four schools of the 207 covered in the survey were found to have school lunch programs. The majority of the schools with lunch programs had enrollments of 150 pupils or under. Teacher interest in the noon lunch seems to be greatest in the country school, which seldom has less than four and sometimes eight grades to the room.

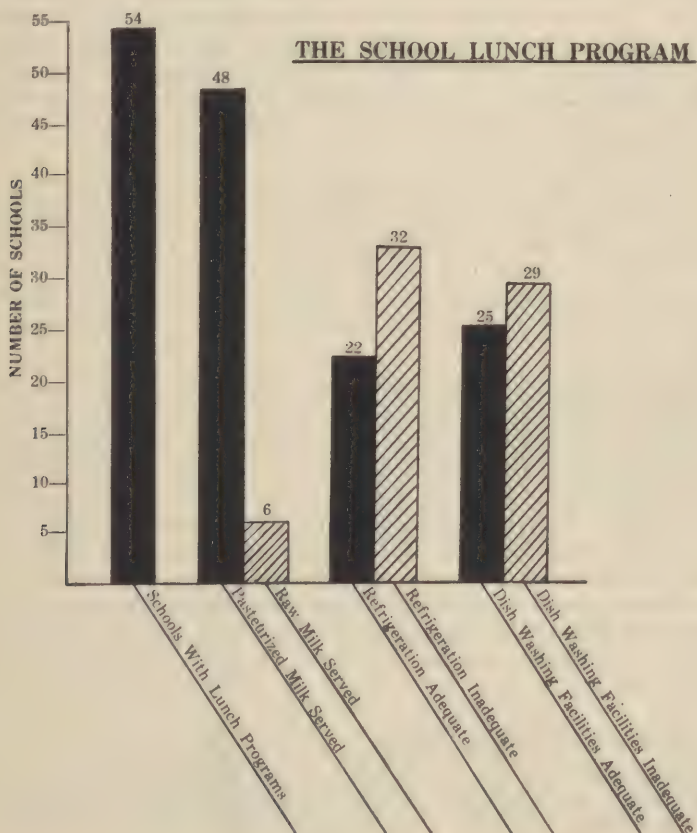
Forty-eight of the 54 schools serving lunches were using pasteurized milk. Of the six schools using raw milk, four are located in



towns where pasteurized milk is not available, and two in sections where pasteurized milk can easily be procured. The two schools not using pasteurized milk when available in the community were advised that the state law forbids the use of raw milk in such cases.

Forty-four schools had refrigeration of some kind. Of this number 22 failed to meet requirements. In most of these cases temperatures were found to be above 50 degrees F. Eight schools were classed as having inadequate refrigeration because of insufficient storage space in the refrigerating unit. It will be noted that ten schools had no refrigeration of any kind. In all these schools perishable foods were either stored in homes or purchased shortly before the preparation of the meal. Only four schools were found where milk was delivered early in the day and no refrigeration was available.

More than half (29) of all the schools with lunch programs had inadequate dish washing facilities. In a majority of cases this was due to an insufficient supply of hot water. Very few schools with inadequate facilities for the heating of water were using a disinfectant of any kind. In a few schools the disinfectant was being used on silver alone.



## Heating and Ventilation

Sixty-six schools, or about 30 per cent of all those surveyed, were heated with stoves. The great majority of these schools were one or two-room buildings. However, one high school was found where coal-burning stoves were used throughout the building. The heating system in this building was extremely inefficient, and open stove pipes in all the classrooms constituted an ever present fire hazard. Over 50 per cent of all the other schools equipped with stoves had unprotected stove pipes, faulty flues or dangerous chimneys. Eight schools had stoves located near the only means of exit. In all of these schools, windows would be the only possible means of egress in case of fire. The only real protective feature afforded pupils in these schools was the fact that the majority of the buildings had but one floor. However, this does not eliminate the possibility of injury or panic if windows have to be used as emergency exits.

Very few of the stove-heated buildings were efficiently heated. The following example gives a fair picture of the average condition existing in these schools: desk nearest stove at time of inspection registered 78 degrees F.; desk at greatest distance from stove, 66 degrees F. Seven schools had average classroom temperatures of 64 or under. In many other cases teachers stated that it was impossible to adequately heat their rooms during the coldest winter months. Twenty-seven schools were heated with stoves which had no protective shields around them. In most cases the pupils nearest these stoves were so uncomfortable during the winter months that efficient work was impossible.

The majority of schools heated with furnaces were equipped with steam systems. The average temperature in these buildings was 73.5 degrees F.. The temperature range was from 66 to 82 in the furnace-heated schools. Approximately 80 per cent of all these schools were rated as having efficient heating systems. In many cases where a system was unsatisfactory, the reason was to be found in poor janitor service.

Proper ventilation seemed to be a problem in at least 60 per cent of all the schools surveyed. More than half of all the schools covered had windows as the only means of ventilation and nearly 30 per cent of these had no air deflectors of any kind. Several schools had efficient ventilating systems which were either being used incorrectly or not at all. Gravity type systems were found in good repair, and yet for some reason were not being used. In some schools teachers did not understand how the ventilating system worked and, rather than inquire, used a window when the room became stuffy or too hot. A few instances were found where the janitor was supposed to regulate ventilation but at the time of survey he was paying little attention to it.

## Gymnasiums and Auditoriums

Thirty-nine schools of the 207 surveyed were found to have either auditoriums, a combined auditorium-gymnasium, gymnasiums, or both. In computing the capacity of these rooms, seven (7) square



feet of floor area was considered as adequate for each individual. The formula used for exit space is as follows: for the first fifty people an exit area or width of 44 inches, and for each hundred thereafter, an additional 24 inches. To be considered adequate, all exits were required to swing with the outward flow of traffic, and these exits must also be equipped with proper panic hardware.

The great majority of the 39 schools with gymnasiums and auditoriums complied in general with the "Coconut Grove" law (chapter 153 of the New Hampshire Laws of 1943). However, two schools were found to have such poor means of egress as to be considered fire traps. Thirteen schools have never had stage fittings fireproofed, and a few other schools had to be classified as doubtful, as no one seemed to be certain. Nine schools classed as inadequate had auditoriums or gymnasiums without lighted exit signs. Sixteen schools met all the provisions of the "Coconut Grove" law and five other schools had auditorium and gymnasium facilities which could be made adequate with a few minor corrections.

Most of the 39 schools had never received a license from the local fire chief. In some cases fire chiefs have not been prone to issue licenses, while in other communities the high school administrator had no knowledge of the law requiring such a license.

In many of the schools surveyed there seemed to be a misunderstanding of the proper meaning of "egress." In practically all of these cases the door alone was considered. A few auditoriums and gymnasiums were found to have adequate, or nearly adequate, door width and yet had to be classified as inadequate, as narrow corridors leading from these rooms cut down the actual exit area.

## **Fire Protection**

The information in this section relative to fire drills has been obtained from the records of teachers, local fire chiefs or drills timed by the survey workers. Seventy-nine of the one hundred and fifty-four elementary schools did not conduct fire drills. The reason for not having these drills in most cases was that teachers or principals did not think them necessary. Of the seventy-five schools having drills, only one took more than two minutes to empty its building. However, several schools had poorly organized fire drills, and in a few instances certain exits were locked or exit space used for the storage of school supplies. Several schools were found to have panic hardware improperly installed, and a few buildings were found to have no panic bolts on outside doors.

Under the Standards Relating to Fire Escapes and Fire Exits as established by the State Department of Health, schools are considered as Class B buildings. Fire escapes on such buildings must have a clear width of 36 inches and the door or window exits shall not be less than 34 inches wide and shall connect directly or by a three-foot passageway with the principle corridors of each story.

Eleven of the high schools surveyed were equipped with fire escapes. Eight of these buildings had 36-inch escapes, one a 31-inch escape, one a ladder-type escape and one a winding-type fire escape.

Five consolidated schools had fire escapes, three of which were 36 inches wide and two were 24 inches. Forty-two elementary schools were found to have some kind of fire escapes. Fourteen schools had 24-inch escapes, twenty-two had 36-inch escapes, one a 33-inch escape, one a 44-inch escape; one building had a ladder-type fire escape, one a fireproof shute and two had 12-inch escapes.

Seventy buildings of the two hundred and seven surveyed have only one exit, seventy-seven have two, the balance having three or more. However, the majority of the buildings having but one exit are single-story buildings with one or two rooms.

It was impossible to obtain completely accurate information on the efficiency of fire extinguishers and fire hose. However, one hundred and eight schools had one or more fire extinguishers, and in 75 per cent of the buildings these had been checked by local fire chiefs within the twelve months preceding the inspection. Eighteen schools were equipped with fire hose and two buildings had sprinkler systems throughout. In general, teachers were not well acquainted with the locations of extinguishers. One principal had a well-type unit in her room but did not know it was there until this fact was called to her attention.



## SUMMARY

The following conclusions are drawn from the data obtained as a result of the survey:

### (1) Lighting

Artificial lighting in our elementary classrooms was found to be 50 per cent short of recommended wattage. Our secondary classrooms need an additional 40 per cent wattage to be deemed adequate. The mere installing of larger bulbs or more fixtures is not the answer to the problem, since many schools are not equipped with adequate wiring to stand an increased load. Natural lighting was inadequate in approximately 70 per cent of all schools visited,—inadequate in that the ratio of window to floor area was less than one to five. Conditions of natural lighting could be greatly improved in our present schools through the installation of proper curtains and the refinishing of ceilings and side walls. The latter in most of the schools are in need of repair.

### (2) Water Supplies and Drinking Water Facilities

Approximately forty per cent of the water furnished in our schools originates from privately-owned wells, springs or brooks which have never been analyzed. Of these supplies one-third were classified as "doubtful" following an analysis. It is recommended that each school have its own well located near the school and that this supply be tested at least twice each year. Such a supply is an absolute necessity if a school lunch program is anticipated.

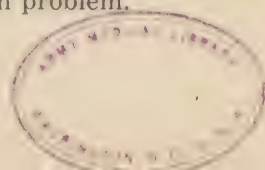
At schools where running water was not available drinking water was served in earthenware water coolers, galvanized iron pails, gallon glass jugs, milk pails and old metal water coolers. The majority of these dispensers could not be adequately cleaned, thus creating an unsanitary condition. Pupils were found to be drinking their water from old paper cups, reused numerous times, and from common drinking glasses. Over 60 per cent of the bubblers installed do not meet the sanitary requirements for drinking fountains.

### (3) Toilet and Sewage Facilities

The toilet facilities of our rural schools were found to be extremely poor. Lack of proper attention and sanitary construction prevailed. Disposal of sewage wastes in many cases was above the ground, offering a definite health hazard.

### (4) Heating and Ventilating

Distribution of heat in our rural schools was poor. A pupil seated at the front of a school room would be extremely uncomfortable while a pupil located in the back of the same room would be chilly. Ventilation was a universal problem in the schools surveyed. Teachers and janitors did not understand the operation of shaft ventilators in the buildings so equipped. The opening of windows in most cases was the system of ventilation used. The mere installation of window deflectors would serve to greatly aid the ventilation problem.



(5) Fire Protection

The great majority of the schools equipped with gymnasiums and auditoriums complied in general with the "Coconut Grove" law, although most of these have never received a license from the local fire chief stating compliance. Of the school buildings equipped with fire escapes only 50 per cent of these escapes complied with the state laws. Fire extinguishers were absent in one-half of the schools visited. A great percentage of the rural schools never conducted any form of fire drill.

(6) School Lunch Program

A relatively small number of rural schools still persist in violating state laws relative to the use of raw milk. Refrigerator space was found to be inadequate or lacking in 50 per cent of all schools having a lunch program. In general, cafeteria space was found inadequate. Dishwashing procedures are given little attention in most of the schools. Storing of dishes shows lack of proper training in many instances. The quantity and temperature of water used offer a serious problem.

(7) School Health Program

It is recommended that a concerted effort be made with the cooperation of the State Departments of Education and Health to plan an integrated health education program in the schools.











